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THE WEEKLY SUMMARY OF CURRENT SCIENCE



OCTOBER 20, 1934

Treasure Seekers

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MEDICINE

Kojic Acid Provides Clue To Cause of Convulsions

EXPERIMENTS which demonstrate for the first time that a relatively simple and common product of sugar metabolism may have toxic results have been reported to the American Chemical Society by Dr. Theodore E. Friedemann of Chicago University's department of medicine.

Dr. Friedemann's experiments provide a clue to the cause of convulsions, for he has demonstrated that certain sugar derivatives, produced in the course of metabolism, can bring on convulsions.

The Chicago experimenter found that kojic acid, when injected into animals intravenously or subcutaneously in relatively small amounts, brought on drowsiness and, in some instances, sleep. Slightly larger doses produced distress and epileptiform convulsions. Still larger doses resulted in repeated fits and, eventually, death. The convulsions were markedly similar to those produced by means of large doses of insulin.

The symptoms of the animals on which he experimented suggested that kojic acid has a specific effect on nervous tissue, and its chemical characteristics suggested that it might have an effect on some enzyme system essential to cell respiration. Experiments carried out at his suggestion showed marked inhibition of tissue oxidations by kojic acid.

Produced By Molds

Kojic acid is easily formed from glucose by the ordinary metabolic processes of many unicellular organism. It is produced in large quantities by molds and certain aerobic bacteria, and it has also been synthesized from glucose.

The chemical structure of kojic acid is very similar to glucose, which is the building stone of ordinary cane sugar and starch. Both kojic acid and glucose have six carbon atoms and the same chemical ring structure. Kojic acid is derived from glucose through oxidation of the third carbon atom, which is followed by a splitting-out of three molecules of water. It is not a true acid, but derives its acidic properties from the phenolic hydrogen atom. Its most remarkable property, Dr. Friedemann

stated, is its extremely high affinity for iron. Such a marked affinity for iron is possessed by no other sugar or protein derivative so far isolated by chemists.

The Chicago investigator pointed out that kojic acid represents an early stage in the oxidation of glucose and, in animals, might be the result of impaired metabolism, and that the conditions preceding convulsions often are such as might lead to the production in the brain of partial or intermediate oxidation products like kojic acid.

Poison From Sugar

"The possibility of autointoxication by sugar," Dr. Friedemann declared, "has never been seriously considered. Autointoxication in the truest sense is the result of poisoning by the body's own metabolic products. Many highly reactive substances have been isolated from the tissues and body fluids of animals. Most of these substances possess a complex chemical structure and practically all contain nitrogen. Our experiments show that kojic acid, a substance of simple structure and containing no nitrogen, can have a profoundly toxic action, especially on nervous tissue. When we consider the ease with which aerobic microorganisms can convert glucose from a relatively unreactive and harmless substance into a substance highly reactive and toxic by a very slight change within the molecule, and when we consider further that from 50 to 90 per cent. of our energy is derived from the metabolism of glucose (the average adult burns about one pound of glucose each day), then we should consider the possibility of autointoxication by the abnormal metabolism of carbohydrate in many clinical conditions which are accompanied or terminated by convulsions."

Science News Letter, October 20, 1934

Only six elderly Indians alive today can speak Tonkawa, an Indian language of Texas.

In a survey of milk consumption by almost 30,000 city families in the United States, it was found that the average family bought only about half a pint daily.

GEOGRAPHY

Enormous Canyon Discovered In Unexplored Mexico

Barranca del Cobre Found 12 Days Journey From Last Outpost Is Great Scenic Wonder Over a Mile Deep

VERIFYING Indian tales that an enormous canyon resembling the Grand Canyon in size and grandeur exists in a practically unexplored part of Mexico, a zoological expedition, sent out from the zoological section of the California Institute of Technology, has rediscovered the Barranca del Cobre, a canyon described as one of the great natural wonders of the earth.

The expedition, consisting of four Americans, led by Robert T. Moore, associate in vertebrate zoology of the Institute, while making a zoological cross-section of extreme northern Sinaloa, penetrated to little known portions of Chihuahua to reach the immense chasm.

A valuable collection of birds and mammals, some new to science, was obtained.

Mr. Moore penetrated far into the hinterland of the high Sierras by means of pack trains and Talamare Indian guides. Twelve days on mule back or afoot took the party through practically unexplored areas, known only to the sly-mouthed Indians and a few Mexican miners.

On the sixth day an altitude of 8,500 feet was reached and the party entered an unexpectedly verdant country, where powerful streams had helped to erode the western face of the Mexican tableland into deep canyons which supported a growth of large pines and cedars. Several of these "barrancas," 2,000 feet deep or more, were crossed in an effort to reach an enormous canyon, which had been reported by the Indians to the leader of the expedition on his trip to southern Sonora in the spring of 1933.

Hundred Miles Long

The Barranca del Cobre was reached on the twelfth day after the departure from the last outpost of civilization. This canyon proved to be fully as large as the Indians had stated. It is claimed by the Talamares to be a hundred miles long.

The Moore expedition was equipped with excellent barometers for ascertain-

ing altitude and depths. At one point where the rim of the barranca dropped almost sheer to the Uriqui River in the bottom, the barometers registered a perpendicular distance of more than a mile. On the rim, 1,000 feet higher, it is estimated that the canyon has a depth of at least 6,500 feet. The party spent a week exploring the bottom and walls of one portion of this great gash in the earth's surface.

Mr. Moore stated that it will take a corps of surveyors several months of exacting work to determine the real width and depth of this huge natural wonder.

Shy and Elusive

The Talamare Indians proved to be a shy and elusive race. Local legends give rise to the belief that they were driven out of the lowlands of Sonora by the more warlike Yaqui Indians many decades ago and since then have led a fugitive life in these rough moun-

tains and canyons. They cut and burn down the forests on the steep slopes of the mountains to provide fields for cultivation, so that their cornfields fairly stand on end.

Plows, hewn out of the roots of trees, are used by these primitive people. Pairs of oxen pull them up the steep mountain sides between the huge stumps of freshly-cut trees. So precipitous are these farms that it is not unusual to see the legs of one ox above the back of its mate.

In the great Barranca del Cobre, some of these Indians were found living under the sloping walls of great cliffs, raising their families and subsisting in these difficult places without any other kind of shelter from the elements.

Science News Letter, October 20, 1934

PHYSICS

New Kind of Helium Discovered in England

THE production of a new kind of helium of atomic weight six instead of the usual four was reported to the recent International Conference on Physics by Prof. M. L. Oliphant of Cambridge's Cavendish Laboratory. Dr. Oliphant was one of the discoverers recently of triple-weight hydrogen. The new helium of atomic mass six was obtained by bombarding beryllium with



PARADE OF HEADS AND HORNS

This procession of four huge skulls in a row has just been arranged at the Peabody Museum of Yale University to show visitors how evolution revised the dinosaur "models" 60,000,000 years ago in America. The Triceratops, at the extreme left, is famous for having the biggest head and, in comparison, the smallest brain of any land animal known. This specimen is the only one of this type of dinosaur ever found in which the bones of the head are not fused. It has been mounted with the bones slightly apart, so that any one bone may be removed for study. Chief Preparator of Vertebrate Paleontology Fred W. Darby is shown inspecting the exhibit. The inset is a restoration of Triceratops.

deutons, the hearts of double-weight hydrogen.

Helium is the rare gas of the air first discovered in the sun. Nearly a half century later it was found in the air of the earth. During the World War, American chemists extracted it from natural gas in quantity and used it to fill airships, replacing inflammable hydrogen gas.

The ordinary kind of helium consists

of atoms having four times the weight of those of ordinary hydrogen. In the past few years multiple varieties of both helium and hydrogen have been discovered. Hydrogen now exists as "triplets," having atomic weights one, two and three. Helium has been detected of mass three and five besides its normal weight of four. Now comes the discovery of the kind of helium isotope having mass six.

Science News Letter, October 20, 1934

PHYSICS

Physics May Soon Discover New Group of Elements

DOCTOR Enrico Fermi the Italian physicist whose experiments on bombarding heavy uranium with non-electrical particles known as neutrons, has set the world of science in a controversy over whether or not super-heavy element No. 93 was created, has just performed similar experiments on the element thorium.

In an interview in London, while attending the International Conference on Physics, Dr. Fermi indicated that his preliminary experiments make him inclined to anticipate the discovery of a whole new radioactive family between the elements actinium and thorium.

Actinium has atomic number 89 in the periodic table of the elements. Its atoms weigh about 227 times as much as those of hydrogen. Thorium has atomic number 90. Its atoms are 232 times as heavy as hydrogen.

By his atom bombarding experiments Dr. Fermi has discovered two radioactive substances of thorium having periods of one and fifteen minutes during which they decay, or disintegrate to half their amount. These are the first two members of the new, anticipated radioactive family for which he is searching. They are probably isotopes of thorium or actinium since there is no gap in the table of the elements at this point.

Paradoxical

A paradoxical action of gamma rays, one of the radiations from radium, was reported by Dr. R. A. Millikan to the conference on behalf of his Pasadena colleagues, H. R. Crane, and Dr. C. C. Lauritsen of the California Institute of Technology. They found that the higher the energy of a gamma ray the more it is absorbed. These experimenters

produced gamma rays by bombarding lithium and fluorine with protons and beryllium, boron and carbon with deuterons.

A record was made when the maximum energy of the gamma rays was measured as between twelve to thirteen million electron volts.

The theoretical physicists had a difficult time keeping up with the experiments reported. One suggestion of what happens in the central portion of the atom was made by Prof. G. Gamow, Soviet scientist who is lecturing this year at the George Washington University, Washington, D. C. Prof. Gamow suggested that within the nucleus there is an exchange of a proton and negative proton for nuclear neutrons. This change does not affect the mass or charge of the atom but it does provide an explanation of the uranium transformation. Prof. Fermi expressed doubt, however.

Science News Letter, October 20, 1934

MEDICINE

Advanced Cancer Now Called Arrestable Disease

By **CHARLES A. DUKES, M.D.**, Vice-President-Elect, American College of Surgeons.

ONE of our great clinicians recently said, "You may die with cancer, but not necessarily of cancer."

Although there is great discouragement in the field of research as regards the cause of cancer, much has been learned about cancer and since the American College of Surgeons has sponsored and adopted certain rules governing cancer clinics, the clinical progress

made in treatment and cure has marked a great advance.

The American College of Surgeons will be told that cancer is curable. Also that though you may have cancer, the mortality has been reduced in advanced cases from 90 per cent. or more to 25 per cent. or less. These cases have been classified among the so-called arrestable diseases.

I believe that the same encouragement that is given to the person who has tuberculosis, can be given to a high percentage of the advanced or neglected cases of cancer.

American College of Surgeons is presented, through public lectures and by the means of symposium in the scientific sections, the garnered knowledge of the medical world in the treatment of this disease.

Today it is well-known that due to the complexity of the decision about cancer treatment the cases are best handled through clinics in which are gathered together the pathologist, the surgeon, the internist, the specialist and the X-ray and radiologist. They study these cases and those who come early are assured of more than 75 per cent. of cures. Those who come late can be assured of relief from pain and in many cases an arrestment of the disease so that the statement made at the beginning of this article is made come true, that "You may die with cancer, but not of cancer."

Science News Letter, October 20, 1934

ASTRONOMY

Planet Pluto Similar In Size to Our Moon

PLUTO, the planet which was discovered by Lowell Observatory astronomers in 1930 beyond the orbit of Neptune, is probably very similar in size to the moon, whose diameter is 2,160 miles. Dr. Walter Baade of the Mt. Wilson Observatory has compared the brightness of Pluto with that of Triton, the satellite of Neptune. This moon is known to be about the same size as ours, and it appears even in the telescope as a point of light, like Pluto.

He has found that Triton is about a fifth of a magnitude brighter than Pluto, a very slight difference, and therefore concludes that they are similar in size. Pluto's average brightness is of magnitude 15.41, and when it is most brilliant it is only 14.14, much too faint to be observed with any but the largest telescopes.

Science News Letter, October 20, 1934

NEW BOOKS

SCIENCE NEWS LETTER presents a comprehensive list of scientific books published or to be published between July 1 and December 31, 1934. All information is believed to be correct but is not guaranteed. Prices marked * are tentative. This list is recommended as a handy reference in the purchasing of books on science.

SCIENCE NEWS LETTER will secure for its subscribers any book or magazine in print which was published in the United States. Send check or money order to cover regular retail price (\$5 if price is unknown, change to be remitted) and we will pay postage in the U. S. When publications are free, send 10c. for handling. Address Book Dept., SCIENCE NEWS LETTER, 21st and Constitution Ave., Washington, D. C.

Archaeology and Anthropology

- ADAM'S ANCESTORS—L. S. B. Leakey—*Longmans, Green*, \$3.20.*
- ALASKA NATIVES—H. Dewey Anderson & Walter Crosby Eells—*Stanford Univ.*, \$5.
- ANCIENT MAYAS—Robert B. Stacy-Judd—*Haskell-Travers*, \$3.50.
- ANTIOCH-ON-THE-ORONTES—Ed. by G. W. Elderkin—*Princeton*, \$12.
- ARABIA AND THE BIBLE—J. A. Montgomery—*Univ. of Pennsylvania*, \$2.
- ARCHAEOLOGY OF COOK INLET, ALASKA—Frederica de Laguna—*Univ. of Pennsylvania*, \$3.
- BEFORE THE DAWN OF HISTORY—Charles R. Knight—*Whittlesey House*, \$2.
- CIVILIZATIONS OF THE EAST, VOLS. 3 AND 4—René Grousset—*Knopf*, \$5, each.
- THE DIABOLIC ROOT—Vincenzo Petruccio—*Univ. of Pennsylvania*, \$2.
- EXCAVATIONS AT DURA-EUROPAS, 1931-32—M. I. Rostovtzeff—*Yale*, \$3.
- FEAR OF THE DEAD IN PRIMITIVE RELIGION, VOL. 2—J. G. Frazer—*Macmillan*, \$4.
- FIVE CIVILIZED TRIBES—Grant Foreman—*Univ. of Oklahoma*, \$4.
- INDIANS OF THE PUEBLOS—Therese Deming—*Whitman*, \$1.50.
- INTRODUCTION TO CULTURAL ANTHROPOLOGY—R. H. Lowie—*Farrar & Rinehart*, \$4.
- JOINT EXPEDITION WITH THE IRAQ MUSEUM AT NUZI; Vol. IV., Court Proceedings, Vol. V., Mixed Texts—Edward Chiera—*Univ. of Pennsylvania*, \$4, each.
- MODERN SAMOA—F. M. Keesing—*Stanford Univ.*, \$4.
- NEW LIGHT ON THE MOST ANCIENT EAST—V. G. Childe—*Appleton-Century*, \$4.
- NEW SOURCES OF INDIAN HISTORY—1850-1891—Stanley Vestal—*Univ. of Oklahoma*, \$3.50.
- THE OVIMBUNDU OF ANGOLA—W. D. Hambly—*Field Museum*, \$2.75.
- THE PREHISTORIC RACES OF KENYA—L. S. B. Leakey—*Oxford*, \$14.*
- ROYAL CEMETERY: Vol. II, Ur Excavations—C. Leonard Woolley—*Univ. of Pennsylvania*, \$20.
- THE SACRED EDIFICES OF THE BATAK, SUMATRA—H. H. Bartlett—*Univ. of Michigan*, \$1.75.
- SEMITIC AND HAMITIC ORIGINS—George Barton—*Univ. of Pennsylvania*, \$4.
- SEXUAL LIFE OF SAVAGES—Bronislaw Malinowski—*Harcourt, Brace*, \$3.75.*
- STORY OF THE AMERICAN INDIAN—Paul Radin—*Liveright*, \$2.50.
- TAMING PHILIPPINE HEADHUNTERS—F. M. Keesing & Marie Keesing—*Stanford Univ.*, \$2.75.

Astronomy

- THE CALCULATIONS OF THE ORBITS OF ASTEROIDS AND COMETS—K. P. Williams—*Principia Press*, \$3.25.

DAYTIME RADIATION AT BLUE HILL OBSERVATORY IN 1933—Bernhard Haurwitz—*Harvard Univ.*, 50c.

INVESTIGATIONS ON BINARY STARS—W. J. Luyten and assistants—*Univ. of Minnesota*, 50c.

RADCLIFFE CATALOGUE OF PROPER MOTIONS IN THE SELECTED AREAS, 1-115—H. Knox-Shaw & H. G. Scott Barrett—*Oxford*, \$12.*

RED-SHIFTS IN THE SPECTRA OF NEBULAE—Edwin Hubble—*Oxford*, 80c.

RESEARCH SURVEYS OF THE MINOR PLANETS—A. O. Leuschner—*Univ. of California*.

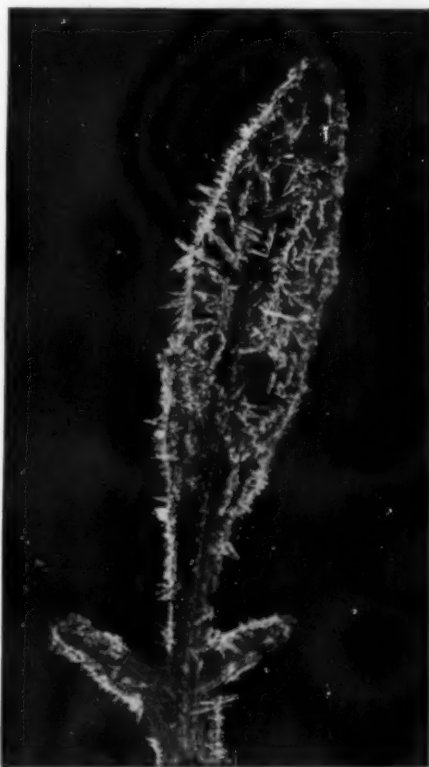
STARS FOR CHILDREN—Gaylord Johnson—*Macmillan*, \$2.

THROUGH SPACE AND TIME—Sir James Jeans—*Macmillan*, \$3.

THE UNIVERSE AROUND US—(3rd ed.)—Sir James Jeans—*Macmillan*, \$3.50.

Biology

THE ALGAE AND THEIR LIFE RELATIONS—J. E. Tilden—*Univ. of Minnesota*, \$4.



FROST

A reminder of the coming winter is given by this photograph of frost crystals clinging to a leaf, caught by the camera of Cornelia Clarke.

BIBLIOGRAPHIC SERVICE, Vol. 7—*Wistar Institute*, \$5.

BIOLOGY—Robert H. Wolcott and Eugene F. Powell—*McGraw-Hill*.

BIOLOGY WORKBOOK MANUAL—Helen G. Mank—*Sanborn*.

ELEMENTS OF MODERN BIOLOGY—Charles R. Plunkett—*Holt*, \$3.

EVOLUTION IN SCIENCE AND RELIGION (rev. ed.)—Robert Millikan—*Yale*, \$1.

EXPLORING WITH THE MICROSCOPE—Raymond F. Yates—*Appleton-Century*, \$2.

HALF MILE DOWN—William Beebe—*Harcourt, Brace*, \$4.50.*

A HISTORY OF EMBRYOLOGY—Joseph Needham—*Cambridge*, \$5.*

AN INTRODUCTION TO BIOLOGY—E. L. Rice—*Ginn*.

LIVING THINGS—Corwin and Corwin—*Blakiston's*, \$1.68.

PLANT BIOCHEMISTRY—W. E. Totttingham—*Burgess*, \$4.25.

PRINCIPLES OF GENETICS AND EUGENICS—Nathan Fasten—*Ginn*.

PROBLEM SOLVING IN BIOLOGY—E. R. Downing & Veva McAtee—*Lyons & Carnahan*.

STUDY BOOK IN BIOLOGY—W. L. Beauchamp—*Scott, Foresman*, 80c.

SYLLABUS IN METHODS OF TEACHING HIGH SCHOOL BIOLOGY—O. S. Olson—*Burgess*, prepublication price, \$1.25.

TRANSACTIONS OF THE BOSE RESEARCH INSTITUTE, CALCUTTA. Biological and Physical Researches. Vol. VIII 1932-1933—Sir Jagadis C. Bose—*Longmans, Green*, \$8.40.*

VITALISM AND MECHANISM—Herbert V. Neal & James F. Porter—*Sherman Goble*, 50c.

Botany and Agriculture

ANNOTATED BIBLIOGRAPHY OF LOW TEMPERATURE RELATIONS OF PLANTS—R. B. Harvey—*Burgess*, \$4.

COMMON WEEDS—P. C. Standley—*Field Museum*, 25c.

ECONOMIC PLANTS—E. E. Stanford—*Appleton-Century*, \$5.

FOREST MENSURATION—Bruce & Schumacher—*McGraw-Hill*.

GARDENER'S MANUAL—Alfred Putz—*Doubleday*, \$1.50.*

THE GRAMINEAE—Agnes Arber—*Cambridge*, \$8.50.

IDENTIFICATION OF THE COMMERCIAL TIMBERS OF THE U. S.—Brown & Panshin—*McGraw-Hill*, \$3.

IN FIELD AND GARDEN—Clyde Fisher and Marion L. Langham—*Noble & Noble*, \$1.*

THE LICHEN FLORA OF THE UNITED STATES—Bruce Fink—*Univ. of Michigan*.

LIFE FORMS OF PLANTS & STATISTICAL PLANT GEOGRAPHY—C. Raunkiaer—*Oxford*, \$14.

MANAGEMENT OF AMERICAN FORESTS—Matthews—*McGraw-Hill*.

MANUAL OF THE TREES OF NORTH AMERICA—Charles S. Sargent—*Houghton, Mifflin*, \$5.*

NORTH AMERICAN TREES—S. J. Record—*Field Museum*, 50c.

PLANT PROPAGATION; 999 Questions and Answers—Alfred C. Hottes—*De La Mare*, \$2.*

A PRACTICAL GUIDE IN FARM ORGANIZATION AND OPERATION—L. F. Garey—*Burgess*, prepublication price, \$1.50.

(Turn to Page 247)

●First Glances at New Books

Physics

THE DESCENT OF THE ATOM—Anonymous—*Lotbrop, Lee and Shepard*, 154 p., \$2.00. A book with appeal for laymen or scientists who find themselves lost in the maze of modern atomic physics. All the new terms of atoms—proton, photon, neutron, deuteron, positron and negatron—pass through the pages of this little anonymous volume. From them, the author builds up his own concept of what it all means choosing and discarding theories of physics as they fit the picture. One would like to know who wrote this book. Whether scientist, schoolteacher or streetcar conductor, lawyer, laborer or layman, he or she knows the facts of physics.

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General Science

SCIENCE IN THE PUBLIC PRESS—Sir Richard Gregory—reprinted from *Science*, October 12, 1934, 8 pp. Free when requested from Science Service. The editor of *Nature* (London) analyzes the situation surrounding the popularization of science in England and comments upon the work of Science Service.

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Psychology

AN INTRODUCTION TO SEX EDUCATION—Winifred V. Richmond—*Farrar and Rinehart*, 312 p., \$2.50. Starting with a comprehensive survey of the biology, history and psychology of sex, Dr. Richmond proceeds to such subjects of everyday discussion as petting, birth control, divorce and homosexuality. The final chapter gives ad-

vice on teaching children about sex. The material, scientifically sound, is presented clearly and simply and without sacrifice of literary style. Thoughtful reading of this book will certainly help parents, teachers, and the children whom they have in their guidance, but its value is not limited to these groups. It may be used as a source of reliable information and opinion by anyone interested in the subjects it covers.

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Psychology

MANUAL SKILL, ITS ORGANIZATION AND DEVELOPMENT—J. W. Cox—*Macmillan*, 247 p., \$5. The report of a comprehensive program of research to determine the nature and relations between the abilities measured by "mechanical" and "routine" assembling tests; the psychology of improvement which comes with practice and that which comes with training; and whether the effects of practice or of training in one mechanical operation transfer to other operations. The author, who is connected with the City of London College, is research fellow of the National Institute of Industrial Psychology, England.

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Economics—Sociology

ESSAYS IN OUR CHANGING ORDER—Thorstein Veblen—*Viking Press*, 472 p., \$3. Veblen is recognized as one of the pioneer minds in our present day analysis of the impact of science and engineering upon civilization. This volume of essays now published five years after his death, bring together much significant material that has not hitherto been easily accessible. It is a contribution to the school of economic thought that seems to be growing stronger with the passage of time.

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PARASITISM AND DISEASE

By Theobald Smith

The Director, Emeritus, of the Department of Animal Pathology of the Rockefeller Institute for Medical Research, the discoverer of the cause of Texas fever, and the world's authority in his field, has written an important and interesting account of the relation between disease and parasitism in its broadest manifestations.

\$2.00

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between

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and
JAMES F. PORTER

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Anthropology

PATTERNS OF CULTURE—Ruth Benedict—*Houghton Mifflin*, 291 p., \$2. Choosing three tribes as illustrative material, Dr. Benedict makes some highly interesting contributions to the understanding of human behavior. From the simpler, pre-literate societies, she demonstrates, it is possible to learn much about behavior patterns that are specific to a local manner of life, differentiating these patterns from those of general human behavior. The groups chosen for this psychological approach to anthropology were Pueblos of New Mexico, Indians of the Northwest Coast, and people of Dobu Island.

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Anthropology—Religion

THE FEAR OF THE DEAD IN PRIMITIVE RELIGION—Sir James G. Frazer—*Macmillan*, 204 p., \$4. The author of the famous "Golden Bough," gives us in print a lecture course on "a prime source of primitive religion" which he recently delivered at Cambridge. The lectures, he promises, are to be expanded later into a larger work on this subject which has heretofore received less attention than it deserves.

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Economics

AMERICA'S CAPACITY TO CONSUME—Maurice Leven, H. G. Moulton and Clark Warburton—*Brookings Institution*, 272 p., \$3. As the second of the Brookings Institution studies directed at factual determination of the distribution of wealth and income in relation to America's economic progress, this volume tells the income of the American people, the disposition of this income and the relation between consumption and production. No planned society, such as many are hopeful that America will achieve, can be accomplished without such fundamental data as are contained in this volume and the earlier companion volume titled "America's Capacity to Produce."

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Advertising

MAKING MILLIONS READ AND BUY—William A. Thomson—*Walter Drey*, 248 p., \$3. Written from the inside, this volume gives a picture of the methods and practices of the widespread newspaper advertising which is so influential in our daily life.

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- RESEARCHES ON FUNGI: Volume VI—A. H. Reginald Buller—*Longmans, Green*, \$12.*
 RESHAPING AGRICULTURE—O. W. Willcox—*Norton*, \$2.
 THE THEORY & PRACTICE OF SILVICULTURE—Baker—*McGraw-Hill*, \$5.
 WILD FLOWERS—H. D. House—*Macmillan*, \$7.50.
 WILD FLOWERS OF LOUISIANA—Caroline Dorman—*Doubleday*, \$7.50.
 WONDERS OF PLANT LIFE, 6 vols.—F. M. Duncan—*Oxford*, each 35c.

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Science News Letter, October 20, 1934

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GENERAL SCIENCE

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ANIMAL PSYCHOLOGY

Animal Teachers

● "Man's ancestors parted company with the ancestors of the chimpanzees and gorillas millions of years ago. How we came to devise language and mathematics and be psychologists while the great apes became our prey or pets, the

THE AUTH

apes certainly cannot be expected to tell us. However, about fundamental problems in original tendencies and learning, they and the mammals in general have much to tell us; and the student of these aspects of human nature will profit greatly from knowledge of animal psychology."—Edward L. Thorndike in *COMPARATIVE PSYCHOLOGY* edited by F. A. Moss (*Prentice-Hall*).

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PHYSICS—COSMOLOGY

Uninfected Judgment

● "It is desirable to emphasize the special necessity in the field of cosmology of avoiding the evils of artists or wish-fulfilling thinking. In the first place, the problems of cosmology are necessarily extensive and intricate and must be attacked in the light of very meagre information. Hence, we must be careful not to substitute the com-

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portable certainties of some simple mathematical model in place of the great complexities of the actual universe. In the second place, it is evident that the past history of the universe and the future fate of man are involved in the issue of our studies. Hence we must be specially careful to keep our judgments uninfected by the demands of theology and unswerved by human hopes and fears."—R. C. Tolman in *RELATIVITY THERMODYNAMICS AND COSMOLOGY* (Oxford).

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SOCIAL SCIENCE

Challenge

● "Today we again have a situation like that in Europe three hundred or four hundred years ago. In some ways I believe it is far more significant. We have millions of people with good bodies and minds who can't get jobs. They are just as good people as those who left Europe for America three hundred years ago. They are looking for another new world.

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PSYCHOLOGY

Human Progress

● "It would seem that more rapid progress, and perhaps progress of a better sort, might be made if we could actually improve the capacities of the individuals in successive generations, so that these individuals would respond to the environment in better ways than their ancestors could have done. Then, instead of starting in each generation at the same level in infancy, and training each to a higher level than the preceding generation attained, each generation would start at a higher level, and progress would be accelerated. Unfortunately, there seems to be no evidence that aside from the effects of training during his lifetime, any individual has greater capacities mental or physical, than had his most remote ancestors."—Knight Dunlap in *CIVILIZED LIFE* (Williams & Wilkins).

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ANTHROPOLOGY

Immortality

● "It is therefore a mistake to suppose that the hope of immortality after death was first revealed to mankind by the founders of the great historical religions, Buddhism, Christianity and Islam; to all appearance, it was cherished by men all over the world thousands of years before Buddha, Jesus Christ and Mohammed were born."—Sir James George Frazer in *THE FEAR OF THE DEAD IN PRIMITIVE RELIGION* (Macmillan and Co., Ltd.).

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● "Geology, as a science of the earth, is usually considered far removed from astronomy, which delves into the universe of stars. One may, however, regard geology as but a highly specialized field of astronomy, for after all it really has to do with the formation, configuration, and behavior of what is to us humans the most important of all the planets, this planet earth."—Harlan T. Stetson in *EARTH, RADIO AND THE STARS* (McGraw-Hill).

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SOCIAL PSYCHOLOGY

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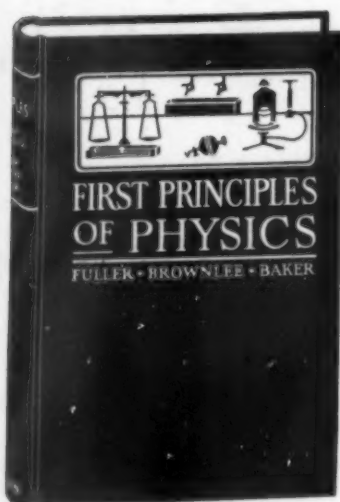
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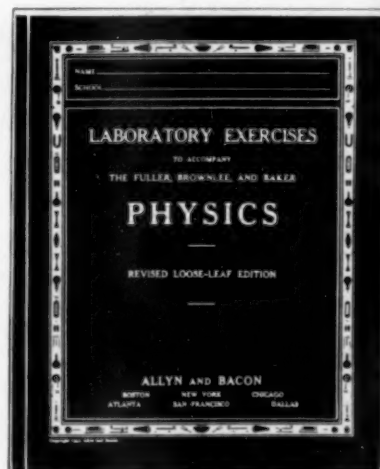
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